



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

November 27, 1985

Mr. Leroy Fyock
Chevron Resources Company
Manila Star Route
Vernal, Utah 84078

Dear Mr. Fyock:

Re: Tentative Approval, Enlargement of Tailings Dam, Vernal
Phosphate Mine, ACT/047/007, Uintah County, Utah

The Division has reviewed the information submitted by Chevron Resources on October 24, 1985, in response to the August 9, 1985 deficiency letter. An updated bond estimate for the entire Vernal Phosphate Mine has also been made. Detailed bond calculations are attached to this letter.

The Division hereby grants tentative approval to the tailings dam expansion. Final approval may be granted after Chevron Resources accepts the attached stipulations in writing, and submits the revised bond amount. The Division must also publish notice of this tentative approval, after which a 30-day public comment period will follow. If no adverse comments are received and Chevron posts bond and accepts the stipulations, final approval could be given in late January, 1986.

Please contact me or Susan Linner if you have comments.

Sincerely,

L. P. Braxton
L. P. Braxton
Administrator
Mineral Resource Development
and Reclamation Program

SCL:jvb
cc: L. Kunzler
J. Leatherwood
S. Linner
R. Summers

0028R-70

STIPULATIONS

Tailings Dam Expansion
Vernal Phosphate Mine
ACT/047/007
Uintah County, Utah

November 27, 1985

Stipulations M-3(2)(e) - LK

1. Seed mix #1 (Page 32 of the December 1982 NPI Revegetation Plan) will be used on the outcrops of the dam.
2. Pending the results of the proposed tailing sands test plots, the operator will prepare and submit for review and approval, a final revegetation plan for reclamation of the tailings. This plan must be submitted within 5 years of implementation of the test plots.

Stipulation M-10(3), (13) - RS

The applicant must obtain approval from the Division at least 120 days prior to abandonment of the facility for designs to ensure that the tailings dam will be non-impounding and self-draining. Designs must be implemented at the site concurrently with final reclamation.

Stipulation M-10(12) - LK

Final test plot design for the tailing sands must be submitted to the Division for review and approval at least 90 days before planned implementation.

Stipulations M-10(14) - JSL

1. A composite sample of the affected borrow material will be analyzed for the parameters approved in the mine plan and results submitted to the Division within 90 days of final permit approval. The objective of this sampling shall be to serve as a basis for final fertilizer recommendations as well as for other amendments such as organic materials.
2. A map delineating the MacIntyre tongue stockpile locations must be submitted 90 days prior to the final placement of said stockpiles. This map will be used to determine the protection and safety of the MacIntyre tongue from compaction, contamination and erosion from water and wind. The operator must submit the approximate aerial extent, dimensions, volume, shape and slope of the stockpiles. Temporarily stockpiled materials must have berms and diversions employed to route surface drainage.

BOND ESTIMATE SUMMARY FOR THE VERNAL PHOSPHATE PROJECT
CHEVRON RESOURCES COMPANY
ACT/047/008

Estimate Updated as of November 1985 - J.R. Harden

BOND ESTIMATE SUMMARY

RECLAMATION COSTS:

Description	Acres	Cost	Cost / Acre
<u>Camp Canyon</u>	54	\$ 93,491	\$ 1,730 / ac
<u>Panel "A"</u>	83	\$ 143,611	\$ 1,730 / ac
<u>Panel "C"</u>	122	\$ 211,132	\$ 1,730 / ac
<u>Plant Facilities/Concentrator Area</u>	50	\$ 40,246	\$ 805 / ac
<u>SAG Mill Area</u>	66	\$ 48,459	\$ 734 / ac
<u>Tailings Pond: Impounded Material</u>	345	\$ 140,841	\$ 408 / ac
<u>Tailings Pond: Miscellaneous Areas</u>	91	\$ 109,532	\$ 1,204 / ac
<u>Roads</u>	68	\$ 40,258	\$ 592 / ac
<u>Add'l. Mining Dist. Thru 1989</u>	1130	\$ 1,954,900	\$ 1,730 / ac
<u>Pipeline Leaving Property</u>	7.5	\$ 2,332	\$ 311 / ac
<u>Conveyor w/Tunnel to Panels D & E</u>	3.5	\$ 1,963	\$ 561 / ac
<u>Access Road to Panels D and E</u>	5.5	\$ 3,223	\$ 586 / ac
<hr/>			
SUBTOTALS -	2,025.5	\$ 2,789,988	

DEMOLITION COSTS:

<u>IX. Bonding (Amended January, 1984)</u>	\$ 449,752
<u>Revised MRP (August, 1984)</u>	\$ 152,669
<hr/>	
SUBTOTAL -	\$ 602,427

TOTAL ESTIMATE IN 1985 DOLLARS:

RECLAMATION COSTS	\$ 2,789,988
DEMOLITION COSTS	\$ 602,427
<hr/>	
Subtotal	\$ 3,392,415
Add 15% Contingency	\$ 508,862
<hr/>	
TOTAL ESTIMATE IN 1985 DOLLARS	\$ 3,901,277

ESCALATION SCHEDULE @ 3.79% PER YEAR (MEANS COST INDEX):

1985\$	\$ 3,901,277
1986\$	\$ 4,049,135
1987\$	\$ 4,202,597
1988\$	\$ 4,361,876
1989\$	\$ 4,527,191
1990\$	\$ 4,698,771

1990\$ ROUNDED TO THE NEAREST \$1000 - \$ 4,699,000

=====

TOTAL BOND AMOUNT REQUIRED IN 1990\$ IS \$ 4,699,000

=====

The Operator may provide full bond in the amount required in 1990\$ for the full five year term, or, submit annual bond amounts equivalent to the escalation schedule for the next years dollars. That is, for 1985, the Operator would have to provide as a minimum bond, the amount given in 1986\$.

UNIT COSTS FOR EQUIPMENT

Equipment costs are based on the Rental Rate Blue Book for Construction Equipment. Labor costs are based on the Means Site Work Cost Data 1985. Other Reclamation work as is required but is not contained in the above references will be cited as they occur.

Due to the extent of the reclamation work at Chevron Phosphate, all equipment costs will be based on the monthly Blue Book rates and converted to hourly costs. Costs for the equipment will include the required hourly maintenance on operating costs.

Total adjusted hourly costs for equipment selected in the estimate are as follows:

1. D-4 DOZER (Cat D-4E)

Monthly Cost	\$ 2,810.00	
Adjusted Hourly Cost per Hour		\$ 15.97
Operating Cost per Hour		\$ 6.65
Operator Cost per Hour		\$ 29.25

TOTAL HOURLY COST FOR D-4 DOZER	\$ 51.87
---------------------------------	----------

2. D-7 DOZER (Cat D-7G)

Monthly Cost	\$ 8,700.00	
Adjusted Hourly Cost per Hour		\$ 49.43
Operating Cost per Hour		\$ 20.35
Operator Cost per Hour		\$ 29.25

TOTAL HOURLY COST FOR D-7 DOZER	\$ 99.03
---------------------------------	----------

3. D-9 DOZER (Cat D-9L)

Monthly Cost	\$ 16,700.00	
Adjusted Hourly Cost per Hour		\$ 94.89
Operating Cost per Hour		\$ 43.05
Operator Cost per Hour		\$ 29.25

TOTAL HOURLY COST FOR D-9 DOZER	\$ 167.19
---------------------------------	-----------

4. 40 TON CRANE (P&H Omega 40)

Monthly Cost	\$ 11,680.00	
Adjusted Hourly Cost per Hour		\$ 66.36
Operating Cost per Hour		\$ 27.40
Operator Cost per Hour		\$ 54.65(Crane Op.&Oiler)

TOTAL HOURLY COST FOR 40 TON CRANE	\$ 148.41
------------------------------------	-----------

5. 2 YD. LOADER (Cat 930)

Monthly Cost	\$ 3,995.00	
Adjusted Hourly Cost per Hour		\$ 22.83
Operating Cost per Hour		\$ 10.45
Operator Cost per Hour		\$ 29.25

TOTAL HOURLY COST FOR 2 YD. LOADER	\$ 62.53
------------------------------------	----------

6. 633 D SCRAPER

Monthly Cost	\$ 20,625.00	
Adjusted Hourly Cost per Hour		\$ 117.19
Operating Cost per Hour		\$ 51.75
Operator Cost per Hour		\$ 29.25

TOTAL HOURLY COST FOR 633 D SCRAPER	\$ 198.19
-------------------------------------	-----------

7. Tractor Trailer (Rear Loading Drop Deck, Triple Axle, 40 T Cap
Trailer with 6x4 Diesel 45-55,000 GVW Tractor))

Monthly Cost	\$ 4,755.00	
Adjusted Hourly Cost per Hour		\$ 27.02
Operating Cost per Hour		\$ 15.55
Operator Cost per Hour		\$ 23.20

TOTAL HOURLY COST FOR	\$ 65.77
-----------------------	----------

OTHER RATES AND COSTS USED

Common Laborers (Means)	\$ 22.40	per hour
Supervisors (Means)	\$ 32.20	per hour
Welders (Means)	\$ 33.50	per hour
Operators (Means)	\$ 29.95	per hour
Seed Mix (Avg.Seed+Seedlings)	\$ 185.00	per acre
Mulch (Lynn Kunzler, DOGM)	\$ 70.00	per ton
Fertilizer @ 50#/ac (Operator)	\$ 45.00	per acre
Power Mulcher (Means)	\$ 98.00	per acre

QUANTITIES, PRODUCTIVITY AND EQUIPMENT SELECTION

Operator estimates for quantities, productivity and equipment selection were used to the extent as was considered reasonable by the Division. Significant changes to the estimate provided by Chevron are summarized below:

- o Supervisors were added to the revegetation/reclamation activities. The duration for supervision was based on the equipment selected with the lowest productivity.
- o Seeding and fertilizing was accomplished using a D-4 Crawler Tractor with appropriate equipment rather than a farm type tractor. This selection was made based on the rolling and rugged terrain expected during reclamation. Similarly, revegetation of the tailings materials may prove difficult with rubber-tired equipment due to the nature of the tailings materials.
- o Additional contouring work was added to the tailing pond impoundment structure, borrow and miscellaneous areas. This would be required to fill in the ponds, round crests of embankments and blend the disturbed area with the adjacent undisturbed areas where needed.
- o Escalation was added to account for the increased costs of construction. The Division uses Means Cost Data to accomplish this and has incorporated escalation into all bonding calculations for all mines. Minimum bonding requirements are for the bond to equal the amount escalated to the next year's dollars for the current year.

The following reclamation costs are updated from IX. Bonding (Amended January, 1984):

Camp Canyon - 54 acres

Supervisor @ 36 days	\$ 9,274	
Contouring, D-9, @ 1.5 ac/day	\$ 48,151	
Topsoil, 633-D, @ 4.0 ac/day	\$ 21,405	
Seed & Fertilizing, D-4, @ 10.0 ac/day	\$ 2,241	
Seed @ \$185.00/ac	\$ 9,990	
Fertilizer @ 50#/ac	\$ 2,430	

	\$ 93,491	\$ 1,730 / ac
	=====	

Panel "A" - 83 acres

Supervisor @ 55 days	\$ 14,168	
Contouring, D-9, @ 1.5 ac/day	\$ 74,009	
Topsoil, 633-D, @ 4.0 ac/day	\$ 32,900	
Seed & Fertilizing, D-4, @ 10.0 ac/day	\$ 3,444	
Seed @ \$150.00/ac	\$ 15,355	
Fertilizer @ 50#/ac	\$ 3,735	

	\$ 143,611	\$ 1,730 / ac
	=====	

Panel "C" - 122 acres

Supervisor @ 81 days	\$ 20,866	
Contouring, D-9, @ 1.5 ac/day	\$ 108,785	
Topsoil, 633-D, @ 4.0 ac/day	\$ 48,358	
Seed & Fertilizing, D-4, @ 10.0 ac/day	\$ 5,063	
Seed @ \$185.00/ac	\$ 22,570	
Fertilizer @ 50#/ac 545/AC	\$ 5,490	

	\$ 211,132	\$ 1,730 / ac
	=====	

Plant Facilities/Concentrator Area - 50 acres

Supervisor @ 17 days	\$ 4,379	
Ripping, D-9, @ 3.0 ac/day	\$ 22,292	
Seed & Fertilizing, D-4, @ 10.0 ac/day	\$ 2,075	
Seed @ \$185.00/ac	\$ 9,250	
Fertilizer @ 50#/ac	\$ 2,250	

	\$ 40,246	\$ 805 / ac
	=====	

SAG Mill Area - 66 acres

Supervisor @ 17 days	\$ 4,379	
Topsoil, 633-D, @ 4.0 ac/day	\$ 26,161	
Seed & Fertilizing, D-4, @ 10.0 ac/day	\$ 2,739	
Seed @ \$185.00/ac	\$ 12,210	
Fertilizer @ 50#/ac	\$ 2,970	

	\$ 48,459	\$ 734 / ac
	=====	

Tailings Pond: Impounded Material - 345 acres

Supervisor @ 35 days	\$ 9,016	
Discing, D-4, @ 10.0 ac/day	\$ 14,316	
Seed & Fertilizing, D-4, @ 10.0 ac/day	\$ 2,739	
Mulching, Power Mulcher @ 24ac/day	\$ 11,270	
Seed @ \$185.00/ac	\$ 63,825	
Fertilizer @ 50#/ac	\$ 15,525	
Mulch, @ 1 ton /ac	\$ 24,150	

	\$ 140,841	\$ 408 / ac
	=====	

Tailings Pond: Structure/Borrow/Miscellaneous Areas - 91 acres

Supervisor @ 30 days	\$ 7,728	
Contouring, D-9, @ 3.0 ac/day	\$ 40,572	
Topsoil, 633-D, @ 4.0 ac/day	\$ 36,071	
Seed & Fertilizing, D-4, @ 10.0 ac/day	\$ 3,776	
Seed @ \$185.00/ac	\$ 16,835	
Fertilizer @ 50#/ac	\$ 4,550	

	\$ 109,532	\$ 1,204 / ac
	=====	

Roads - 68 acres

Supervisor @ 14 days	\$ 3,606	
Ripping, D-9, @ 5.0 ac/day	\$ 18,190	
Seed & Fertilizing, D-4, @ 10.0 ac/day	\$ 2,822	
Seed @ \$185.00/ac	\$ 12,580	
Fertilizer @ 50#/ac	\$ 3,060	

	\$ 40,258	\$ 592 / ac
	=====	

The following reclamation costs are updated from the bonding calculations for the Revised Mine and Reclamation Plan of Vernal Phosphate operations, submitted in August, 1984:

Additional Disturbance From 1984 thru 1989

<u>YEAR</u>	<u>ACREAGE</u>
1984-85	W 80 E 180
1986	W 70 E 100
1987	W 90 E 110
1988	W 90 E 140
1989	W 70 E 200
<hr/>	
TOTAL	1130 Acres

Estimate @ \$1730 / ac
(Average Reclamation Cost for Mined
Areas)

\$ 1,954,900
=====

The following reclamation costs are updated from the bonding calculations for the Revised Mine and Reclamation Plan of Vernal Phosphate operations, submitted in August, 1984:

Pipeline Leaving Property - 7.5 acres

Supervisor @ 1 day	\$ 258
Seed & Fertilizing, D-4, @ 10.0 ac/day	\$ 311
Seed @ \$185.00/ac	\$ 1,388
Fertilizer @ 50#/ac	\$ 375

\$ 2,332
=====

\$ 311 / ac

Conveyor w/ Tunnel to Panels D and E - 3.5 acres

Supervisor @ 1 day	\$ 258	
Seed & Fertilizing, D-4, @ 10.0 ac/day	\$ 311	
Power Mulching	\$ 343	
Seed @ \$185.00/ac	\$ 648	
Fertilizer @ 50#/ac	\$ 158	
Mulch @ 1 ton /ac	\$ 245	

	\$ 1,963	\$ 561 / ac
	=====	

Access Road to Panels D and E - 5.5 acres

Supervisor @ 1 day	\$ 258	
Ripping, D-9, @ 5.0 ac/day	\$ 1,471	
Seed & Fertilizing, D-4, @ 10.0 ac/day	\$ 228	
Seed @ \$185.00/ac	\$ 1,018	
Fertilizer @ 50#/ac	\$ 248	

	\$ 3,223	\$ 586 / ac
	=====	

DEMOLITION COSTS

The following demolition costs are updated from IX. Bonding (Amended January, 1984):

ACTIVITY	MAN/EQUIPMENT DAYS	UNIT COST/DAY	TOTAL
Supervisors	140	\$ 257.60	\$ 36,064
Laborers	851	\$ 179.20	\$152,499
Welders	150	\$ 268.00	\$ 40,200
Crane w/ Operator	75.75	\$ 1,187.28	\$ 89,936
D-7 Dozer	10.5	\$ 792.24	\$ 8,319
Tractor Trailer	151.50	\$ 526.16	\$ 79,713
Front End Loader	86.00	\$ 500.24	\$ 43,021

		TOTAL	\$ 449,752
			=====

The following demolition costs are updated from the bonding calculations for the Revised Mine and Reclamation Plan of Vernal Phosphate operations, submitted in August, 1984:

ACTIVITY	MAN/EQUIPMENT DAYS	UNIT COST/DAY	TOTAL
Supervisors	84	\$ 257.60	\$ 18,032
Laborers	425	\$ 179.20	\$ 62,720
Welders	40	\$ 268.00	\$ 10,720
Crane w/ Operator	25	\$ 1,187.28	\$ 29,682
D-7 Dozer	4	\$ 792.24	\$ 3,169
D-9 Dozer	5	\$ 1,337.52	\$ 6,688
Tractor Trailer	30	\$ 526.16	\$ 13,154
Front End Loader	22	\$ 500.24	\$ 8,504

		TOTAL	\$ 152,669
			=====